METHOD AND APPARATUS FOR TREATING FLUE GAS

Abstract of the Disclosure

A multiple-field precipitator, flue-gas treating device, in accordance with the principles of the invention, includes a first section having a dual-function, sensible-cooling heat exchanger/electrostatic precipitator, second section having a wet electrostatic precipitator, and a middle section fluidly connecting the first and second sections. In the first section, the exchanger/precipitator sensibly cools the flue gas and collects most of the dust from the flue gas. In the middle section, the dust-reduced flue gas is combined with an alkaline material, thereby forming reaction products. These reaction products and several other pollutants are captured by the wet electrostatic precipitator, in the form of a pollutant-laden liquid. The pollutant-laden liquid is directed to a series of heat exchangers and settling tanks, where various pollutants such as SO_X, metals, NO_X, and chlorides are removed in different stages. In addition, ammonia is liberated from the pollutant-laden liquid, and circulated back to the middle section, where it is combined with additional dust-reduced flue gas to form additional reaction products for subsequent capture in the wet electrostatic precipitator.